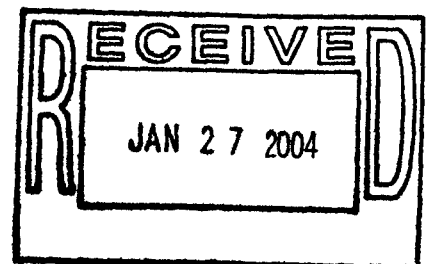


**NOTICE !**

**ALL DRAWINGS  
ARE LOCATED  
AT THE END OF  
THE DOCUMENT**

**Industrial Area  
Sampling and Analysis Plan  
FY04 Addendum #IA-04-09  
IHSS Group 600-5**



**January 2004**

**ADMIN RECORD**

**IA-A-001947**

1/14

**Industrial Area  
Sampling and Analysis Plan  
FY04 Addendum #IA-04-09  
IHSS Group 600-5**

Approval received from the Colorado Department of Public Health and Environment

January 22, 2004

Approval letter contained in the Administrative Record

**January 2004**

## **TABLE OF CONTENTS**

1 0 INTRODUCTION	1
2 0 EXISTING CHARACTERIZATION INFORMATION	1
3 0 SAMPLING	5
4 0 REFERENCES	6

## **LIST OF FIGURES**

Figure 1 IHSS Group 600-5 (PAC 600-1004) and Overlapping IHSSs and PACs Location Map	2
Figure 2 IHSS Group 600-5 (PAC 600-1004) Existing Surface Soil Sampling Results Greater Than MDLs or Background Means Plus Two Standard Deviations	3
Figure 3 IHSS Group 600-5 (PAC 600-1004) Existing Subsurface Soil Sampling Results Greater Than MDLs or Background Means Plus Two Standard Deviations	4
Figure 4 IHSS Group 600-5 (PAC 600-1004) Proposed Sampling Locations	10

## **LIST OF TABLES**

Table 1 IHSS Group 600-5 PCOCs	1
Table 2 IHSS Group 600-5 Sampling Specifications	7
Table 3 IHSS Group 600-5 Sampling Summary	5

## ACRONYMS

AL	action level
CDPHE	Colorado Department of Public Health and Environment
DOE	U S Department of Energy
EPA	U S Environmental Protection Agency
FY	Fiscal Year
ft bgs	feet below ground surface
HPGe	high-purity germanium
HRR	Historical Release Report
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
MDL	method detection limit
ug/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
N/A	not applicable
NFAA	no further accelerated action
PAC	Potential Area of Concern
pCi/g	picocuries per gram
PCOC	potential contaminant of concern
RFCA	Rocky Flats Cleanup Agreement
RSOP	RFCA Standard Operating Protocol
SAP	Sampling and Analysis Plan
SVOC	semivolatile organic compound
UBC	Under Building Contamination
VOC	volatile organic compound
WRW	wildlife refuge worker

## 1.0 INTRODUCTION

This Industrial Area (IA) Sampling and Analysis Plan (SAP) (IASAP) (DOE 2001) Addendum #IA-04-09 includes Individual Hazardous Substance Site (IHSS) Group-specific information, sampling locations, and potential contaminants of concern (PCOCs) for IHSSs, Potential Areas of Concern (PACs), and Under Building Contamination (UBC) Sites proposed for characterization during Fiscal Year (FY) 04. This IASAP Addendum is a supplement to the IASAP (DOE 2001) and includes data and proposed sampling locations for IHSS Group 600-5. IHSS Group 600-5 consists of the Central Avenue Ditch Cleaning (PAC 600-1004). The location of the PAC and IHSS Group 600-5 is shown on Figure 1.

## 2.0 EXISTING CHARACTERIZATION INFORMATION

PAC 600-1004 is an area of soil previously removed from the Central Avenue Ditch. Potentially contaminated soil from areas along the Central Avenue Ditch (IHSS 190) (Figure 1) was excavated and spread on the level area adjacent to the two large fuel oil tanks located at the southwestern corner of Central Avenue and Seventh Street (IHSS 152). This activity was observed by the Colorado Department of Health and Environment (CDPHE) in September 1993 and the operation was immediately shut down due to the potential of cross-contaminating IHSSs. The area where the excavated soil was spread is designated as Central Avenue Ditch Cleaning PAC 600-1004.

Existing concentrations and activities in soil greater than method detection limits (MDLs) or background means plus two standard deviations are presented on Figures 2 and 3. Existing information and data for this IHSS are available in Appendix C of the IASAP (DOE 2001), the Historical Release Reports (HRRs) (DOE 1992-2003, 1999), and the Final Closeout Report for IHSS Group 600-2 (PAC 400-802, Storage Shed South of Building 334) (DOE 2003). Table 1 presents the PCOCs and proposed sampling methodologies.

**Table 1**  
**IHSS Group 600-5 PCOCs**

IHSS Group	IHSS/PAC/UBC Site	PCOCs	Media	Data Source	Sampling Location Method
600-5	PAC 600-1004 – Central Avenue Ditch Cleaning	Metals Radionuclides SVOCs VOCs	Surface and subsurface soil	HRRs (DOE 1992-2003, 1999) IASAP (DOE 2001) Closeout Report for IHSS Group 600-2 (DOE 2003) Process knowledge	Statistical grid Biased sampling

Previous data for IHSS Group 600-5 indicate no detections of analytes greater than the Rocky Flats Cleanup Agreement (RFCA) wildlife refuge worker (WRW) action levels (ALs) (DOE et al. 2003). Concentrations of lead in surface and subsurface soil were reported at levels exceeding the ecological receptor AL. Radionuclide activities and concentrations of metals, volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs) were reported above corresponding background means plus two standard deviations or detection limits in surface and subsurface soil (Figures 2 and 3).

IHSS Group 600-5 is located in close proximity to other potential contaminant sources (Figure 1) and overlaps with portions of the following IHSSs

- Northeastern portion of IHSS Group 600-2 (PAC 400-802 – Storage Shed South of Building 334) No further accelerated action (NFAA) approved June 2003,
- Northern portion of IHSS 152 NFAA approved September 1999,
- Northeastern portion of IHSS 157 1 (included in IHSS Group 400-7 and currently being investigated), and
- An approximately 335-foot section of IHSS 190 (Central Avenue Ditch) that will be investigated in the future

No portion of PAC 600-1004 lies outside of other potential contaminant sources

### 3.0 SAMPLING

The proposed sampling specifications (number and type of samples) for IHSS Group 600-5 (PAC 600-1004) are listed in Table 2 and shown on Figure 4. A 36-foot statistical grid was applied at PAC 600-1004 to obtain samples in the eastern portion of the PAC. Accelerated action samples were already collected in the western portion of PAC 600-1004 as part of the IHSS Group 600-2 (PAC 400-802) characterization activities (DOE 2003). One biased sampling location is included in the northwestern portion of PAC 600-1004 to provide additional characterization coverage in this area. Sampling of subsurface soils is to be limited to emplaced soils, therefore, if native soil is encountered in the 0.0 to 0.5 feet below ground surface (ft bgs) interval, no sample is to be collected from the next interval (0.5 to 2.5 ft bgs). Alternately, if emplaced soil is encountered in the surface soil sample, the subsurface interval (0.5 to 2.5 ft bgs) will consist of a composite of only emplaced soil to the pre-existing native surface. Additionally, no samples are proposed to be collected from within the Central Avenue Ditch (IHSS 190) because this IHSS will be addressed as part of the IHSS Group 000-3 SAP Addendum and RFCA Standard Operating Protocol (RSOP) Notification.

The IHSS Group 600-5 sampling summary is presented in Table 3.

**Table 3**  
**IHSS Group 600-5 Sampling Summary**

Category	Total
Number of Sampling Locations	9
Number of Samples	18
Number of Metal Analyses	18
Number of Radionuclide Analyses	18
Number of SVOC Analyses	18
Number of VOC Analyses	9

Proposed new sampling locations are the starting point for IHSS Group characterization. After characterization starts, the number and type of samples may change based on sample results. Changes to sampling specifications will be considered in consultation.

with the regulatory agencies. If contaminant concentrations are found to be above ALs near the grid boundary, additional samples will be collected in consultation with the regulatory agencies and a contact record will be issued. Biased sampling locations will be field-checked and the locations adjusted through the consultative process.

#### **4.0 REFERENCES**

DOE, 1992-2003, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado

DOE, 1999, Annual Historical Release Report for the Rocky Flats Plant, Golden, Colorado, September

DOE, 2001, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June

DOE, 2003, Final Closeout Report for IHSS Group 600-2 (PAC 400-802, Storage Shed South of Building 334), Rocky Flats Environmental Technology Site, Golden, Colorado, June

DOE, CDPHE, and EPA, 2003, Modifications to the Rocky Flats Cleanup Agreement, U S Department of Energy, Colorado Department of Public Health and Environment, and U S Environmental Protection Agency, Rocky Flats Environmental Technology Site, Golden, Colorado, June



**Table 2**  
**IHSS Group 600-5 Sampling Specifications**









IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	On-site Laboratory Method	Off-site Laboratory Method	Comments
600-5	600-1004	BZ39-034	2082701 224	749278 927	Surface soil	0 0-0 5'	Metals	6200	6010	Biased - sample northwestern portion of IHSS to obtain more complete sampling coverage
		BZ39-034	2082701 224	749278 927	Surface soil	0 0-0 5'	Radionuclides	HPGe	HPGe	Biased - sample northwestern portion of IHSS to obtain more complete sampling coverage
		BZ39-034	2082701 224	749278 927	Surface soil	0 0-0 5'	SVOCs	N/A	8270	Biased - sample northwestern portion of IHSS to obtain more complete sampling coverage
		BZ39-034	2082701 224	749278 927	Subsurface soil	0 5-2 5'	Metals	6200	6010	Biased - sample northwestern portion of IHSS to obtain more complete sampling coverage
		BZ39-034	2082701 224	749278 927	Subsurface soil	0 5-2 5'	Radionuclides	HPGe	HPGe	Biased - sample northwestern portion of IHSS to obtain more complete sampling coverage
		BZ39-034	2082701 224	749278 927	Subsurface soil	0 5-2 5'	SVOCs	N/A	8270	Biased - sample northwestern portion of IHSS to obtain more complete sampling coverage
		BZ39-034	2082701 224	749278 927	Subsurface soil	0 5-2 5'	VOCs	8260	8260	Biased - sample northwestern portion of IHSS to obtain more complete sampling coverage
		CA39-013	2082873 101	749248 448	Surface soil	0 0-0 5'	Metals	6200	6010	Statistical grid for PAC 600-1004
		CA39-013	2082873 101	749248 448	Surface soil	0 0-0 5'	Radionuclides	HPGe	HPGe	Statistical grid for PAC 600-1004
		CA39-013	2082873 101	749248 448	Surface soil	0 0-0 5'	SVOCs	N/A	8270	Statistical grid for PAC 600-1004
		CA39-013	2082873 101	749248 448	Subsurface soil	0 5-2 5'	Metals	6200	6010	Statistical grid for PAC 600-1004
		CA39-013	2082873 101	749248 448	Subsurface soil	0 5-2 5'	Radionuclides	HPGe	HPGe	Statistical grid for PAC 600-1004
		CA39-013	2082873 101	749248 448	Subsurface soil	0 5-2 5'	SVOCs	N/A	8270	Statistical grid for PAC 600-1004
		CA39-013	2082873 101	749248 448	Subsurface soil	0 5-2 5'	VOCs	8260	8260	Statistical grid for PAC 600-1004
		CA39-014	2082847 257	749273 51	Surface soil	0 0-0 5'	Metals	6200	6010	Statistical grid for PAC 600-1004
		CA39-014	2082847 257	749273 51	Surface soil	0 0-0 5'	Radionuclides	HPGe	HPGe	Statistical grid for PAC 600-1004
		CA39-014	2082847 257	749273 51	Surface soil	0 0-0 5'	SVOCs	N/A	8270	Statistical grid for PAC 600-1004
		CA39-014	2082847 257	749273 51	Subsurface soil	0 5-2 5'	Metals	6200	6010	Statistical grid for PAC 600-1004

IRSS Group	IRSS/PAC/ UBC Site	Location Code	Easting	Northing	Media*	Depth Interval	Analyte	On-site Laboratory Method	Off-site Laboratory Method	Comments
		CA39-014	2082847 257	749273 51	Subsurface soil	0 5-2 5'	Radionuclides	HPGe	HPGe	Statistical gnd for PAC 600-1004
		CA39-014	2082847 257	749273 51	Subsurface soil	0 5-2 5'	SVOCs	N/A	8270	Statistical gnd for PAC 600-1004
		CA39-014	2082847 257	749273 51	Subsurface soil	0 5-2 5'	VOCs	8260	8260	Statistical gnd for PAC 600-1004
		CA39-015	2082907 727	749258 298	Surface soil	0 0-0 5'	Metals	6200	6010	Statistical gnd for PAC 600-1004
		CA39-015	2082907 727	749258 298	Surface soil	0 0-0 5'	Radionuclides	HPGe	HPGe	Statistical gnd for PAC 600-1004
		CA39-015	2082907 727	749258 298	Surface soil	0 0-0 5'	SVOCs	N/A	8270	Statistical gnd for PAC 600-1004
		CA39-015	2082907 727	749258 298	Subsurface soil	0 5-2 5'	Metals	6200	6010	Statistical gnd for PAC 600-1004
		CA39-015	2082907 727	749258 298	Subsurface soil	0 5-2 5'	Radionuclides	HPGe	HPGe	Statistical gnd for PAC 600-1004
		CA39-015	2082907 727	749258 298	Subsurface soil	0 5-2 5'	SVOCs	N/A	8270	Statistical gnd for PAC 600-1004
		CA39-015	2082907 727	749258 298	Subsurface soil	0 5-2 5'	VOCs	8260	8260	Statistical gnd for PAC 600-1004
		CA39-016	2082881 883	749283 36	Surface soil	0 0-0 5'	Metals	6200	6010	Statistical gnd for PAC 600-1004
		CA39-016	2082881 883	749283 36	Surface soil	0 0-0 5'	Radionuclides	HPGe	HPGe	Statistical gnd for PAC 600-1004
		CA39-016	2082881 883	749283 36	Surface soil	0 0-0 5'	SVOCs	N/A	8270	Statistical gnd for PAC 600-1004
		CA39-016	2082881 883	749283 36	Subsurface soil	0 5-2 5'	Metals	6200	6010	Statistical gnd for PAC 600-1004
		CA39-016	2082881 883	749283 36	Subsurface soil	0 5-2 5'	Radionuclides	HPGe	HPGe	Statistical gnd for PAC 600-1004
		CA39-016	2082881 883	749283 36	Subsurface soil	0 5-2 5'	SVOCs	N/A	8270	Statistical gnd for PAC 600-1004
		CA39-016	2082881 883	749283 36	Subsurface soil	0 5-2 5'	VOCs	8260	8260	Statistical gnd for PAC 600-1004
		CB39-005	2082942 353	749268 148	Surface soil	0 0-0 5'	Metals	6200	6010	Statistical gnd for PAC 600-1004
		CB39-005	2082942 353	749268 148	Surface soil	0 0-0 5'	Radionuclides	HPGe	HPGe	Statistical gnd for PAC 600-1004
		CB39-005	2082942 353	749268 148	Surface soil	0 0-0 5'	SVOCs	N/A	8270	Statistical gnd for PAC 600-1004
		CB39-005	2082942 353	749268 148	Subsurface soil	0 5-2 5'	Metals	6200	6010	Statistical gnd for PAC 600-1004
		CB39-005	2082942 353	749268 148	Subsurface soil	0 5-2 5'	Radionuclides	HPGe	HPGe	Statistical gnd for PAC 600-1004
		CB39-005	2082942 353	749268 148	Subsurface soil	0 5-2 5'	SVOCs	N/A	8270	Statistical gnd for PAC 600-1004
		CB39-005	2082942 353	749268 148	Subsurface soil	0 5-2 5'	VOCs	8260	8260	Statistical gnd for PAC 600-1004
		CB39-006	2083002 823	749252 936	Surface soil	0 0-0 5'	Metals	6200	6010	Statistical gnd for PAC 600-1004
		CB39-006	2083002 823	749252 936	Surface soil	0 0-0 5'	Radionuclides	HPGe	HPGe	Statistical gnd for PAC 600-1004
		CB39-006	2083002 823	749252 936	Surface soil	0 0-0 5'	SVOCs	N/A	8270	Statistical gnd for PAC 600-1004
		CB39-006	2083002 823	749252 936	Subsurface soil	0 5-2 5'	Metals	6200	6010	Statistical gnd for PAC 600-1004
		CB39-006	2083002 823	749252 936	Subsurface soil	0 5-2 5'	Radionuclides	HPGe	HPGe	Statistical gnd for PAC 600-1004
		CB39-006	2083002 823	749252 936	Subsurface soil	0 5-2 5'	SVOCs	N/A	8270	Statistical gnd for PAC 600-1004
		CB39-006	2083002 823	749252 936	Subsurface soil	0 5-2 5'	VOCs	8260	8260	Statistical gnd for PAC 600-1004
		CB39-007	2082976 979	749277 998	Surface soil	0 0-0 5'	Metals	6200	6010	Statistical gnd for PAC 600-1004
		CB39-007	2082976 979	749277 998	Surface soil	0 0-0 5'	Radionuclides	HPGe	HPGe	Statistical gnd for PAC 600-1004
		CB39-007	2082976 979	749277 998	Surface soil	0 0-0 5'	SVOCs	N/A	8270	Statistical gnd for PAC 600-1004
		CB39-007	2082976 979	749277 998	Subsurface soil	0 5-2 5'	Metals	6200	6010	Statistical gnd for PAC 600-1004

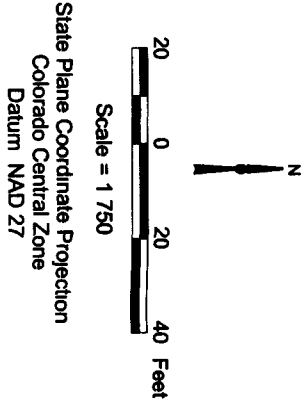
IISS Group	IISS/PAC/ UBC Site	Location Code	Easting	Northing	Media*	Depth Interval	Analyte	On-site Laboratory Method	Off-site Laboratory Method	Comments
		CB39-007	2082976 979	749277 998	Subsurface soil	0 5-2 5'	Radionuclides	HPGe	HPGe	Statistical grid for PAC 600-1004
		CB39-007	2082976 979	749277 998	Subsurface soil	0 5-2 5'	SVOCs	N/A	8270	Statistical grid for PAC 600-1004
		CB39-007	2082976 979	749277 998	Subsurface soil	0 5-2 5'	VOCs	8260	8260	Statistical grid for PAC 600-1004
		CB39-008	2083011 606	749281 848	Surface soil	0 0-0 5'	Metals	6200	6010	Statistical grid for PAC 600-1004
		CB39-008	2083011 606	749281 848	Surface soil	0 0-0 5'	Radionuclides	HPGe	HPGe	Statistical grid for PAC 600-1004
		CB39-008	2083011 606	749281 848	Surface soil	0 0-0 5'	SVOCs	N/A	8270	Statistical grid for PAC 600-1004
		CB39-008	2083011 606	749281 848	Subsurface soil	0 5-2 5'	Metals	6200	6010	Statistical grid for PAC 600-1004
		CB39-008	2083011 606	749281 848	Subsurface soil	0 5-2 5'	Radionuclides	HPGe	HPGe	Statistical grid for PAC 600-1004
		CB39-008	2083011 606	749281 848	Subsurface soil	0 5-2 5'	SVOCs	N/A	8270	Statistical grid for PAC 600-1004
		CB39-008	2083011 606	749281 848	Subsurface soil	0 5-2 5'	VOCs	8260	8260	Statistical grid for PAC 600-1004

\* - Note, sampling of subsurface soils is to be limited to emplaced soils, therefore, if native soil is encountered in the 0 0 to 0 5 ft interval, no sample is to be collected at the 0 5 to 2 5 ft interval. Alternately, if emplaced soil is encountered, the subsurface interval (0 5 to 2 5 ft bgs) should consist of a composite of ONLY emplaced soil to the pre-existing native surface if encountered

**Figure 4**  
**IHSS Group 600-5**  
**(PAC 600-1004)**  
**Proposed Sampling Locations**

- ## KEY
- Statistical sampling location
  - Biased sampling location
  - Sampling location from PAC 400-802 characterization
- |   |                                |
|---|--------------------------------|
|  | PAC 600-1004                   |
|  | PAC 400-802                    |
|  | IHSS 152                       |
|  | Demolished structure           |
|  | Structure                      |
|  | Paved area                     |
|  | Dirt road                      |
|  | Stream ditch or other drainage |

**Disclaimer—** Neither the U.S. Government, Kaiser HM LLC, nor any of the employees making any warranty, press or implied, or assumes any legal liability or responsibility for the accuracy, completeness or usefulness of any information, apparatus, product or process disclosed or represents that its use would not infringe on privately owned rights.

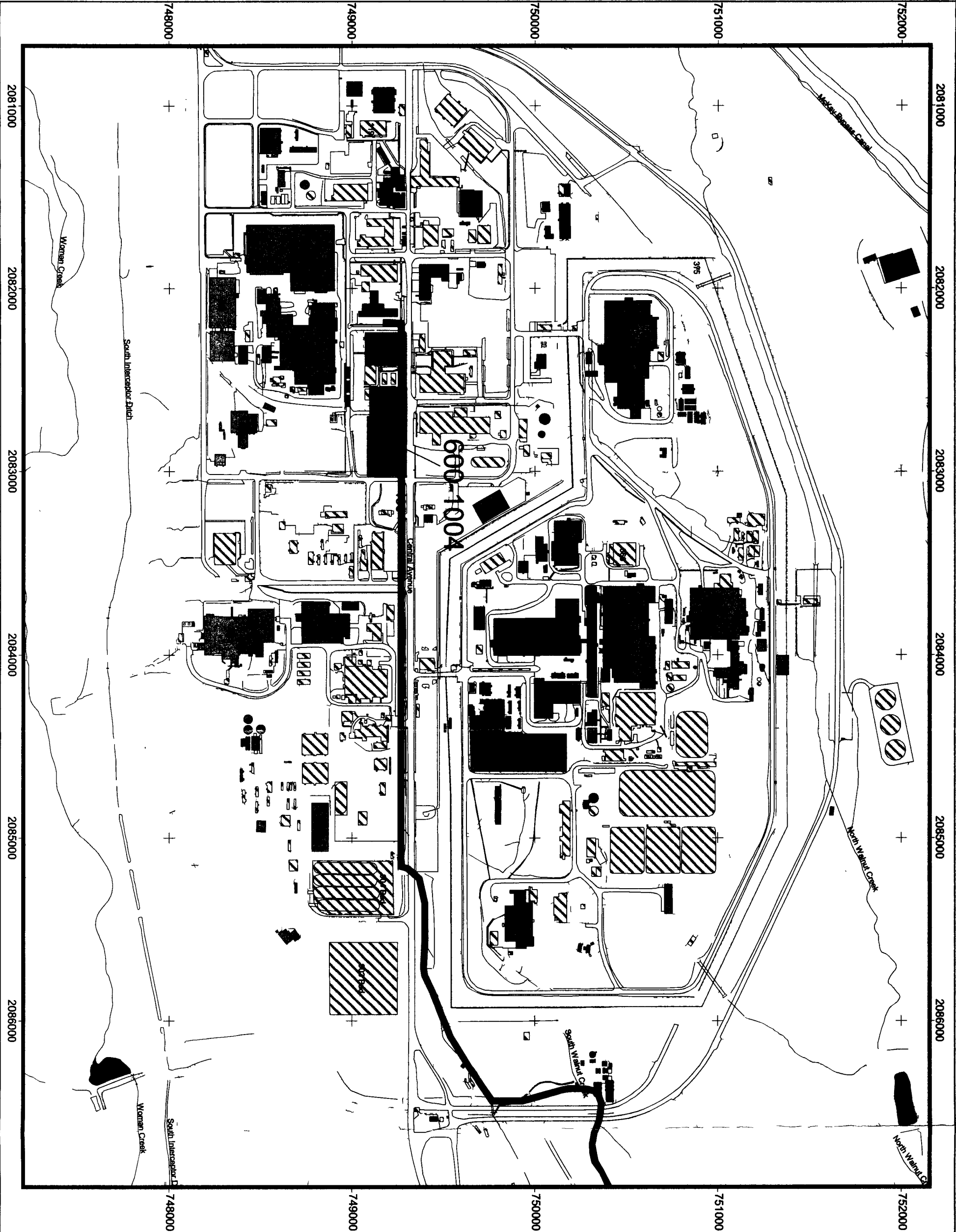


U S Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by [REDACTED]

Prepared for: [REDACTED]





**Figure 1**  
**IHSS Group 600 5**  
**(PAC 600 1004)**  
**and Overlapping IHSSs**  
**and PACs Location Map**

**KEY**

- ☐ PAC 600-1004
- Overlapping IHSSs and PACs  
Not Part of IHSS Group 600 5
- IHSS 152
- IHSS 157 1
- IHSS 190
- PAC 400-802

- Demolished structure
- Structure
- Paved area
- Dirt road
- Stream ditch or other  
drainage

Disclaimer: Neither the U.S. Government, Kaiser-Hill, LLC, nor any of its employees, makes a warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, product, or process disclosed or represented in this document, or for the results of its use.

N

200 0 200 400 Feet

Scale = 1:8,000

State Plane Coordinate Projection  
Colorado Central Zone  
Datum: NAD 27

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by



Prepared for



2081500

2082000

2082500

2083000

2083500

2084000

Figure 2

# IHSS Group 600-5 (PAC 600 1004) Existing Surface Soil Sampling Results Greater Than MDLs or Background Means Plus Two Standard Deviations

## KEY

- Surface soil sampling location with results greater than ecological action levels
- Surface soil sampling location with results greater than background means plus two standard deviations or DLs

PAC 600-1004

Demolished structure

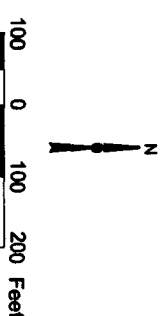
Structure

Paved area

Dirt road

Stream ditch or other drainage

D. Scamler  
Weather the U.S. Government Kaiser-Hill, LLC an agency thereof, nor any of the employees, nor to any warranty express or implied or assumes any legal liability or responsibility for the accuracy, completeness or usefulness of any information presented, provided or process disclosed or represents that its use would not infringe on or be solely owned rights.



Scale 1:4,500

State Plane Coordinate Projection  
Colorado Central Zone  
Datum NAD 27

U.S. Department of Energy

Rocky Flats Environmental Technology Site

Prepared by

Prepared by

KAISER-HILL  
COMPANY

600 Scha\_gpp\_11\_03.ap

Ja u v 2004



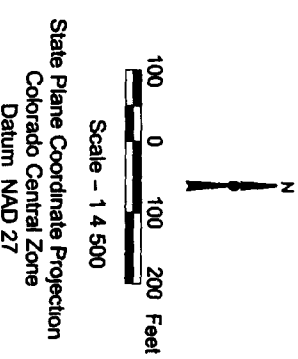
Figure 3

IHSS Group 600-5  
(PAC 600 1004)  
Existing Subsurface Soil  
Sampling Results  
Greater Than MDLs  
or  
Background Means  
Plus Two Standard Deviations

KEY

- Subsurface soil sampling location with results greater than ecological action levels
- Subsurface soil sampling location with results greater than background means plus two standard deviations or DLs
- PAC 600-1004
- Demolished structure
- Structure
- Paved area
- Dirt road
- Stream ditch or other drainage

D: scanline  
Neither the U.S. Government, Kaiser-Hill, LLC, nor any of its employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness or usefulness of any information, product, or process disclosed, or represents that its use would not infringe on privately owned rights.



State Plane Coordinate Projection  
Colorado Central Zone  
Datum NAD 27

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by

